



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,815	01/17/2002	David Layden	501737	8176
53609	7590	10/26/2005	EXAMINER TIBBITS, PIA FLORENCE	
REINHART BOERNER VAN DEUREN LTD. 483 NORTH MULFORD ROAD SUITE 7 ROCKFORD, IL 61107			ART UNIT 2838	PAPER NUMBER

DATE MAILED: 10/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/031,815	LAYDEN ET AL.	
	Examiner Pia F. Tibbits	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 06 September 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-27 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-27 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 17 January 2002 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is in answer to the amendment filed 9/6/2005. Claims 1-27 are pending, and claims 28-59 were canceled.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, two battery packs coupled in series to supply output power to a connected load and a battery charger, the connected load, the channel, the parallel coupled battery channels, the user, the voltage sense circuit, the voltage sense selector circuit, the operating mode specific predetermined expected value, the equipment type identifier, etc. must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter: "two battery packs coupled in series to supply output power to a connected load and a battery charger", "first nominal value", "first predetermined amount", "first predetermined value",

Art Unit: 2838

"second nominal value", "second predetermined amount", "third nominal value", "third predetermined amount", "average midpoint voltage value for all slots", etc. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required.

Claim Objections

3. Claims 2, 17-20, 24, 25 are objected to because of the following informalities:

Claim 2 recites "a plurality of battery channels coupled in parallel with one another", while claim 1, upon which claim 2 depends recites "one battery channel, each having at least two battery packs coupled in series". Therefore, "the first nominal value" and "the first predetermined amount", recited in claim 2, lack antecedence.

"first nominal value" and "first predetermined amount" need to be defined in reference to "first predetermined value" and "first predetermined amount" recited in claim 1, upon which claim 2 depends.

Claims 3-5: "second nominal value" and "second predetermined amount" need to be defined in reference to "first nominal value" and "first predetermined amount" recited in claim 1, upon which claims 3 and 4 depend.

Claim 6 recites "a plurality of battery channels coupled in parallel with one another", while claims 1 and 3, upon which claim 6 depends recite "one battery channel, each having at least two battery packs coupled in series". Therefore, "the second nominal value" and "the second predetermined amount", recited in claim 6, lack antecedence.

Claims 6 and 7: "second nominal value" and "second predetermined amount" need to be defined in reference to "second nominal value" and "second predetermined amount" recited in claim 3, upon which claims 6 and 7 depend.

Claims 9-11: "third nominal value" and "third predetermined amount" need to be defined in reference to "first nominal value" and "first predetermined amount" recited in claim 1, upon which claims 9-11 depend.

Claim 12 recites "a plurality of battery channels coupled in parallel with one another", while claims 1 and 9, upon which claim 6 depends recite "one battery channel, each having at least two

Art Unit: 2838

battery packs coupled in series". Therefore, "the third nominal value" and "the third predetermined amount", recited in claim 12, lack antecedence.

Claims 12 and 13: "third nominal value" and "third predetermined amount" need to be defined in reference to "third nominal value" and "third predetermined amount" recited in claim 9, upon which claims 12 and 13 depend.

Claims 12-14: "third nominal value" and "third predetermined amount" need to be defined in reference to "first nominal value" and "first predetermined amount" recited in claim 9, upon which claims 12-14 depend.

Claim 17: "the step of identifying a failed battery pack within a slot when the voltage for its associated slot deviates from the predetermined expected value by a predetermined amount comprises the step of identifying a failed battery pack within a slot when the voltage for its associated slot deviates from the operating mode specific predetermined expected value by a predetermined amount" is not clear since the same "predetermined amount" is used for two different steps.

Claim 18: "first predetermined value" and "first predetermined amount" need to be defined in reference to "predetermined expected value" and "predetermined amount" recited in claim 17, upon which claim 18 depends.

Claim 19: "third predetermined value" and "third predetermined amount" need to be defined in reference to "predetermined expected value" and "predetermined amount" recited in claim 17, upon which claim 19 depends.

Claim 20: "fourth predetermined value" and "fourth predetermined amount" need to be defined in reference to "predetermined expected value" and "predetermined amount" recited in claim 17, upon which claim 20 depends.

Claims 24, 25: "the associated slot", first occurrence, lacks antecedence. Appropriate correction is required.

The above are but a few specific examples of indefinite and functional or operational language used throughout the claims, and are only intended to illustrate the extensive

revision required to overcome the objections in claims 1-27. The above-mentioned corrections therefore, are in no way a complete and thorough listing of every indefinite and functional or operational language used throughout the claims. Applicant is required to revise all of the claims completely, and not just correct the indefinite and functional or operational language mentioned. The following art rejections are given in view of the above objections of claims 1-27. Therefore, the following art rejections are applied only as far as the claims are understood in view of the objections for claims 1-27.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior art disclosed by applicant, "**A systems approach to telecom battery monitoring and control using the rectifier power plant**" by Kevin White [hereinafter White] in view of Burkett [3626270].

Claim 1: the recitation in the preamble is ambiguous, i.e., "two battery packs coupled in series to supply output power to a connected load and a battery charger" reads that the batteries are supplying power to both, a load and a charger. As there is no drawing description it is not clear why the charger is recited as a "load". Also the specification describes in paragraph [0015] "A battery charger is also preferably included to maintain and restore charge to the batteries during normal utility line operation", which contradicts the recitation in the preamble. To continue prosecution it was assumed that the battery charger charges the battery.

White discloses a non-invasive method of monitoring operational readiness of electric power storage batteries in an uninterruptible power supply UPS system/telecom system, the UPS system having

Art Unit: 2838

at least one battery channel, each having at least two battery packs coupled in series to supply output power to a connected load/telecom system by monitoring a voltage at a midpoint [see page 628] between the two battery packs; comparing the voltage to a first nominal value for the midpoint voltage during the quiescent state of operation of the battery packs; indicating a lack of operational readiness of both battery packs when the voltage at the midpoint is less than the first nominal value by a first predetermined amount [see fig.9]. White does not disclose a battery charger, monitoring the voltage at a midpoint during a quiescent state of operation of the battery packs.

Burkett discloses a charger 1 and method for monitoring a voltage during a quiescent state of operation of the battery packs, i.e., the battery voltage when no charge current is flowing during a charge interval, since monitoring the voltage during a quiescent state of operation of the battery packs is a good indicator of the state of charge of the battery and may be employed to indicate the selected state of charge. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify White's method and include monitoring a voltage during a quiescent state of operation of the battery packs, as disclosed by Burkett, in order to have a good indicator of the state of charge of the battery.

As to claim 2, to continue prosecution it was assumed that applicant claims a multiple celled series or series-parallel connection of individual batteries. One skilled in the art would be able to choose an appropriate power supply configuration, i.e., multiple celled series or series-parallel connection of individual batteries, without undue experimentation, in order to produce the desired voltage and ampere-hour requirements of the load. As to calculating the first nominal value for the midpoint voltage during the quiescent state of operation of the battery packs as the average of the voltages monitored for each parallel coupled battery channel: the use of an average voltage value, absent any criticality, is only considered to be the use of "optimum" or "preferred" value for a variable that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to use since it has been held to be a matter of **obvious design choice** and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of

Art Unit: 2838

the invention. See *In re Leshin*, 125 USPQ 416. Under some circumstances, however, changes such as these may impart patentability to a process if the particular values claimed produce a new and unexpected result, which is different in kind and not merely in degree from the results of the Prior Art. *In re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; *In re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such values are termed "critical", and the applicant has the burden of proving such criticality. *In re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; *In re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the Prior Art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. *In re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; *In re Norman et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; *In re Irmscher*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F. 2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D. C. 324, 135 F.2d 11, 57 USPQ 136.

As to claims 3-14: it would have been obvious to one having ordinary skill in the art at the time the invention was made to repeat monitoring a voltage at a midpoint since it has been held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F. 2d 669, 124 USPQ 378 (CCPA 1960) and MPEP 2144.04.

As to the method claims 1-14: the method steps will be met during the normal operation of the apparatus described above.

6. Claims 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Murao et al.** [hereinafter Murao] [6014012] in view of prior art disclosed by applicant, **PK Electronics** [hereinafter PK] and **White**, as described above.

As to claim 15, Murao discloses in figures 1-11 a system for detecting defective battery packs in a modular, redundant uninterruptible power supply (UPS) system comprising a voltage sense circuit 11a-11n coupled to each series coupling [see fig.1] and operable to generate a voltage sense signal V in response to a voltage present thereon; a voltage sense selector circuit 21 coupled to each of the voltage sense circuits 11a-11n, the voltage sense selector circuit 21 operable to selectively enable the voltage sense circuits; a controller 20 operably coupled to the voltage sense selector circuit 21 to command the voltage sense selector circuit to enable of a particular voltage sense circuit, the controller reading the voltage sense signal V from the voltage sense circuit; and wherein said controller compares the voltage sense signal to a predetermined expected value E and identifies an operational status of the battery packs based thereon [see the abstract; column 2, lines 63-67]. Murao does not disclose the UPS system having a plurality of parallel connected slots into which may be coupled the battery packs, power modules, or battery chargers, each slot being adapted to accommodate two battery packs, and monitoring midpoint voltage.

PK describes a UPS, US9001, including battery-modules plugged into available slots that run independently to ensure that the system will not stop even when any one of the modules fail and to extend back-up time. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murao's system and include a plurality of parallel connected slots into which may be coupled the battery packs, as disclosed by PK, in order to ensure that the system will not stop even when any one of the modules fail, and to extend back-up time.

As to the limitation of having each slot/module being adapted to accommodate two battery packs: it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a selection for the number of batteries in each slot in order to configure an optimum power system as the more battery cells are connected in a series configuration, the more voltage and/or speed that can be delivered to a load, since it has been held that discovering an "optimum" or "preferred" value for a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Art Unit: 2838

Murao and PK do not disclose monitoring average midpoint voltage.

White discloses a non-invasive method of monitoring operational readiness of electric power storage batteries in an uninterruptible power supply (UPS) system/telecom system, and monitoring a voltage at a midpoint where the voltage of the top and bottom halves are compared for acceptable matching in order to minimize maintenance visits to a site [see page 628]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murao's and PK's system and include monitoring midpoint voltage, as disclosed by White, in order to minimize maintenance visits to a site.

As to calculating an average midpoint voltage for all slots, and comparing the voltage for each slot to the average midpoint voltage for all slots to identify the operational status of the battery packs for each slot: the use of an average midpoint voltage value for all slots, absent any criticality, is only considered to be the use of "optimum" or "preferred" value for a variable that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to use since it has been held to be a matter of **obvious design choice** and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. See *In re Leshin*, 125 USPQ 416. Under some circumstances, however, changes such as these may impart patentability to a process if the particular values claimed produce a new and unexpected result, which is different in kind and not merely in degree from the results of the Prior Art. *In re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; *In re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such values are termed "critical", and the applicant has the burden of proving such criticality. *In re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; *In re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the Prior Art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. *In re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; *In re Norman et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; *In re Irmscher*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general

Art Unit: 2838

conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F. 2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D. C. 324, 135 F.2d 11, 57 USPQ 136.

As to claims 16-21: it would have been obvious to one having ordinary skill in the art at the time the invention was made to repeat monitoring a voltage at a midpoint since it has been held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F. 2d 669, 124 USPQ 378 (CCPA 1960) and MPEP 2144.04.

As to claims 16-21, see remarks and references above.

As to the method claims 15-21: the method steps will be met during the normal operation of the apparatus described above.

7. Claims 22, 23, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Murao**, as described above, in view of in view of prior art disclosed by applicant, **PK**, as described above.

As to claim 22, Murao discloses in figures 1-11 a system for detecting defective battery packs in a modular, redundant uninterruptible power supply (UPS) system comprising a voltage sense circuit 11a-11n coupled to each series coupling [see fig.1] and operable to generate a voltage sense signal V in response to a voltage present thereon; a voltage sense selector circuit 21 coupled to each of the voltage sense circuits 11a-11n, the voltage sense selector circuit 21 operable to selectively enable the voltage sense circuits; a controller 20 operably coupled to the voltage sense selector circuit 21 to command the voltage sense selector circuit to enable of a particular voltage sense circuit, the controller reading the voltage sense signal V from the voltage sense circuit; and wherein said controller compares the voltage sense signal to a predetermined expected value E and identifies an operational status of the battery packs based thereon [see the abstract; column 2, lines 63-67]. Murao does not disclose the UPS system having a plurality of parallel connected slots into which may be coupled the battery packs, power modules, or battery chargers, each slot being adapted to accommodate two battery packs.

Art Unit: 2838

PK describes a UPS, US9001, including battery-modules plugged into available slots that run independently to ensure that the system will not stop even when any one of the modules fail and to extend back-up time. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murao's system and include a plurality of parallel connected slots into which may be coupled the battery packs, as disclosed by PK, in order to ensure that the system will not stop even when any one of the modules fail, and to extend back-up time.

As to the limitation of having each slot/module being adapted to accommodate two battery packs: it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a selection for the number of batteries in each slot in order to configure an optimum power system as the more battery cells are connected in a series configuration, the more voltage and/or speed that can be delivered to a load, since it has been held that discovering an "optimum" or "preferred" value for a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 23, calculating an average voltage value, and comparing the voltage sense signal for each slot to the average voltage value to identify the operational status of the battery packs for each slot: the use of an average voltage value, absent any criticality, is only considered to be the use of "optimum" or "preferred" value for a variable that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to use since it has been held to be a matter of **obvious design choice** and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. See *In re Leshin*, 125 USPQ 416. Under some circumstances, however, changes such as these may impart patentability to a process if the particular values claimed produce a new and unexpected result, which is different in kind and not merely in degree from the results of the Prior Art. *In re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; *In re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such values are termed "critical", and the applicant has the burden of proving such criticality. *In re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; *In re Scherl*, 33 CCPA

Art Unit: 2838

(Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's modification results in great improvement and utility over the Prior Art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. *In re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; *In re Norman et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; *In re Irmischer*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F. 2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D. C. 324, 135 F.2d 11, 57 USPQ 136.

8. Claims 24, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Murao** and **PK**, as described above, in view of **White**, as described above.

As to claim 24, Murao and PK do not disclose the controller reads the voltage sense signal for each slot in which battery packs are installed during a float charge mode, compares the voltage sense signal for each slot to an expected voltage value for the float charge mode, and identifies a first one of the battery packs in a slot as defective when the voltage sense signal for the associated slot is less than the expected voltage value for the float charge mode, and identifies a second one of the battery packs in a slot as defective when the voltage sense signal for the associated slot is greater than the expected voltage value for the float charge mode.

White discloses maximizing battery life by charging the batteries at the proper float charge, and that if float voltage is not adjusted [see fig.1] the battery life drops by about 50% [see page 624]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murao's and PK's system, and include monitoring during a float charge mode, as disclosed by White, in order to maximize battery life by charging the batteries at the proper float charge.

As to claim 25, Murao and PK do not disclose the controller reads the voltage sense signal for each slot in which battery packs are installed during a discharge mode, compares the voltage sense

Art Unit: 2838

signal for each slot to an expected voltage value for the discharge mode, and identifies a first one of the battery packs in a slot as defective when the voltage sense signal for the associated slot is less than the expected voltage value for the discharge mode, and identifies a second one of the battery packs in a slot as defective when the voltage sense signal for the associated slot is greater than the expected voltage value for the discharge mode.

White discloses a battery discharge test in order to report the estimated capacity and estimated reserve time [see fig.2; pages 625-626]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murao's and PK's system, and include monitoring during a battery discharge test, as disclosed by White, in order to report the estimated capacity and estimated reserve time.

9. Claims 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Murao** and **PK**, as described above, in view of **Finger** [4460870].

As to claim 26, Murao and PK do not disclose wherein the voltage sense selector circuit comprises a shift register having a clock input and a slot select input from the controller, the shift register sequentially generating a plurality of output enable signals in response to the clock input and the slot select input from the controller, each of the output enable signals operative to turn on a switching element to connect the voltage sense circuit to the controller.

Finger discloses in figures 1-10 a shift register 80 responding to a clock counter output and shifting logic positions by means of switching transistors 90 and 92, in order to detect successive time sample intervals [see fig.4; column 8, lines 14-24]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Murao's and PK's system and include in the voltage sense selector circuit including a shift register activating switching transistors, as disclosed by Finger, in order to detect successive time sample intervals of the battery.

As to claim 27, the use of a metal oxide silicon field effect transistor (MOSFET), absent any criticality, is only considered to be the use of "optimum" or "preferred" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have

Art Unit: 2838

found obvious to provide for the switching transistors in order to increase the response speed, disclosed by Reeves and Finger, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. See *In re Leshin*, 125 USPQ 416.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

11. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: prior art disclosed by applicant, "**Middle-point voltage comparison as a simple and practical but effective way to ensure battery system's capacity to perform**" describes a theoretical "middle point voltage". The prior art cited in PTO-892 and not mentioned above disclose related apparatus: **Terry** [3816805] discloses a known dual battery system that includes two 12-volt batteries and a series-parallel switch by means of which the two batteries may be connected either in series to provide a 24-volt output for starting or in parallel to provide a 12 -volt output for normal service. **Daggett** [3886426] discloses batteries that can be wired in various combinations of parallel, series-parallel, and completely series connections to thereby provide a plurality of output voltages to the common positive and common

Art Unit: 2838

negative leads. **Paul et al.** [5332927] discloses a battery or batteries 45 will be selected based on a particular application: e.g., the battery 45 may be a multiple celled series or series-parallel connection of individual batteries, which are connected together to produce the desired voltage and ampere-hour requirements of the load.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is (571) 272-2086. If unavailable, contact the Supervisory Patent Examiner Mike Sherry whose telephone number is (571) 272-2084. The Technology Center Fax number is (703) 872-9306.

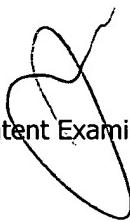
14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PFT

October 19, 2005

Pia Tibbits

Primary Patent Examiner

A handwritten signature in black ink, appearing to read "Pia Tibbits". It consists of a stylized, looped initial followed by a surname.